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EBOLA: WHO Experts Support Nigeria to Record More Survivors

Story courtesy of the World Health Organization



Graphic illustration by Mikelle D. Smith, Naval Medical Research Center Public Affairs

(Cmdr. David Brett-Major is currently detailed from the Naval Medical Research Center to WHO)

LAGOS - Dr. David Brett-Major of the Global Capacities Alert and Response department of the World Health Organization (WHO) that led the team of experts to successfully treat and discharge the first Nigerian Ebola Virus disease (EVD) survivor insists that usual patient care for any severely ill patient was the practice for all patients at the EVD care center, August 19.

As of August 18 Nigeria reported 12 confirmed cases of EVD including four deaths. Nine of the confirmed cases were health workers who cared for the deceased case imported from Liberia.

A total of 264 contacts have been registered since the onset of the outbreak of which 194 were being tracked real-time using android phones. Contacts are usually tracked for 21 days following last exposure to a person suffering from EVD.

Dr Brett-Major, who has been providing clinical care consultation in the management of suspected and confirmed EVD patients, technical advice on case finding, screening and triage, infection prevention and control (IPC) practice and other aspects of clinical management said that he is "grateful that some of the EVD patients in Nigeria have done so well."

The first confirmed EVD patient discharge occurred August 16; four more confirmed patients returned to their families two days later.

The expert, since arrival in Nigeria, was instrumental to initiating care for patients in the EVD care center and also contributed to the development and distribution of the initial point of screening protocol. Also provisions of technical advice to the case management working group on direct patient care aspects and implementation of the initial mass gatherings technical advice, while advocating for broader health-care system active case finding as well as

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NMRC Commanding Officer's Message



Doris Ryan, our Public Affairs Officer, and I were recently providing material to the National Museum of Health and Medicine for a Science Café hosted by the museum that will highlight Navy Medical Research and Development.

We gave them a photograph of a painting (see painting on page 3) that hangs at NMRC depicting medical researchers in their white lab coats or surgical garb in the foreground surrounded by scenes in the background of Sailors and Marines deployed in a variety of operational environments ranging from under the sea to outer space. This is one of my favorite paintings. It is artistically well done and now has a charming, nostalgic quality as it depicts some dated equipment and uniforms.

More importantly, it has a remarkably clear message. Navy Medical R&D is about providing answers and developing solutions for health and medical issues for our Sailors and Marines for every setting in which they deploy, which as the painting makes clear, can be anywhere. Our eight research commands continue to work on projects ranging from vaccine and drug development to fatigue, resilience, and disorientation for settings on land, sea, and air. Given the complexity of these issues and the difficult challenges of these environments, it is important that our efforts continue to be coordinated and collaborative. We will be holding an enterprise leadership meeting this month, the first we've had in over two years due to the restrictions on travel, to discuss processes and activities to make sure we are optimizing our efforts.

I am looking forward to the chance for us to keep working together to improve our ability to achieve our shared mission to protect and improve the health of our forces in all their deployed environments.

**NMRC Commanding Officer sends,
John. W. Sanders III, CAPT, MC, USN**

NMRC Director, Field Operations Message

While many Naval Medical Research Center (NMRC) research and research support staff have no recollection of NMRC being anywhere but the Forest Glenn campus in Silver Spring, it was a hot August day 15 years ago I packed my active files and personal belongings from my shared third floor office in the old Naval Medical Research Institute (Bldg. 17) on the National Naval Medical Center campus in Bethesda and moved into the brand-new, and newly furnished NMRC Field Lab Director's Office in the newly constructed Daniel K. Inouye building on Forest Glenn.

While the physical move to this beautifully conceived, state-of-the art research facility was wonderful in and of itself, it had a significance that transcended the mere physical relocation. For starters, the move gave a new physical identity to the NMRC command that had been established only a year before, replacing the old, and although beloved, worn-out and overcrowded NMRI.

The new building and nicely appointed command suite appropriately projected NMRC's enhanced responsibilities as a Headquarters Command for four subordinate laboratories, and also the accelerated tempo and growing reputation of its science programs. Equally important was NMRC's co-location with the Walter Reed Army Institute of Research (WRAIR), fostering collaboration among the two commands that had, more times than not, perceived each other as competitors.

It may come as a surprise to some (e.g. those that were in grade school or high school 15 years ago) that the move also promoted stronger relationships among NMRC/NMRI science departments some of which, like Malaria, Enterics, and Biological Defense, had relocated some or all of their operations at locations remote from the main NMRI facilities due to space constraints.

While 15 years is a modest milestone at best, and not cause for major celebration, it is sufficient cause for reflection on the degree to which we have delivered on the promise of the Inouye Building and the relocation to Forest Glenn.

Given our advances in wound management, regenerative medicine, traumatic brain injury research, and vaccine and infectious disease diagnostics development, I think the late Senator Inouye would have been rightfully proud of his unwavering support for the construction of this facility.



**NMRC Director, Field Operations
Dr. Stephen Walz**

(continued from page 1)

increased preparedness by the National Government.

Since August 7, the first Nigerian physician, Dr Bowale, who committed to direct participation in the care team at a time when health worker panic was rife, received orientation from Dr. Brett-Major, as have increasing numbers of physicians and nurses now participating in care of patients.

Support by the response team has been robust and several Nigerian, WHO and CDC personnel have been important in making care possible. An MSF team was instrumental in assisting the transfer of patients to a more conducive setting, also subsequently in providing patient care and expertise.

Brett-Major said that this was “welcome progress” as early in the response, the initial absence of participating healthcare and ancillary workers “required me to conduct most aspects of triage, sampling and care of suspected and confirmed patients, under the approval and monitoring of the Mainland Hospital, Yaba, medical director and state and federal authorities.” He added, “close support by my WHO colleagues on site particularly from logistician Mr Kamal Ait-Ikhlef and others such as Dr Maurizio Barbeschi was essential.”

Nursing and hygiene as well as administrative staffing however remain critical challenges at the care center.



Dr. David Brett-Major of the Global Capacities Alert and Response department of the World Health Organization

NMRC PAINTING DEPICTING MEDICAL RESEARCHERS IN VARIOUS WORK ENVIRONMENTS. (CONTINUED FROM PAGE 2 NMRC COMMANDING OFFICER'S MESSAGE)



Navy Lab in Peru Maintains Readiness for Possible Disease Pandemics

Story courtesy of NAMRU-6 Public Affairs



NAMRU-6 staff, Capt. Kyle Petersen, Dr. Alberto Laguna and Ms. Carolina Guevara with Dr. Nicolas Aguayo, NGO Rayos del Sol and the staff of regional medical center Mariscal Estigarribia. Sites like this hospital provide critical epidemiological data to maintain pandemic readiness. (Photo courtesy of NAMRU-6 Public Affairs).

LIMA, Peru - Global disease pandemics like the 1919 Spanish Flu can threaten the defense of nations by debilitating their armed forces.

Natural disasters can cause outbreaks of disease among displaced persons when clean water supplies and sewage systems are threatened, destroyed, or standing water brings increased numbers of insect vectors.

Global climate change appears to be affecting patterns of disease. Since the advent of antibiotics in the 1930s, there has been a progression of antibiotic and antiviral drug resistance among microorganisms threatening global health.

The U.S. Naval Medical Research Unit No. Six (NAMRU-6) maintains a system of surveillance sites in Latin America to monitor for developments in new strains of disease such as Dengue Fever, Malaria, drug resistant diarrhea and influenza.

NAMRU-6 Commanding Officer

Capt. Kyle Petersen recently traveled to Paraguay with Deputy Director of Virology Dr. Alberto Laguna and Biologist Carolina Guevara to meet with partner nation military, ministries of health and visit surveillance sites for Dengue Fever, arboviruses and influenza.

Paraguay is unique as a tropical and semitropical country centrally located on the continent. It has a large savanna called the Grand Chaco that is sparsely populated with agricultural sites. This mix of wildlife, domesticated animals and humans living together makes it an excellent potential source of new viruses.

"I am confident NAMRU-6 is ready for the next pandemic," said Petersen. "Sites such as Asuncion and the Chaco and outstanding partners such as the Paraguayan Ministry of Health, Rayos del Sol NGO, and the Paraguayan military help us [stay] eternally vigilant and strengthen local healthcare capacity in the region."

Research collaborations are established with a partner clinic, hospital or NGO. Patients who consent to enrolling in the study have a sample of their blood taken.

The samples are sent back to Lima for molecular and serological analysis. The results are provided to the clinic, hospital, or ministry of health benefiting the partner nation's public health capability. If relevant, they are sent to global health entities such as WHO, CDC, and PAHO for archiving.

Meanwhile at NAMRU-6, the strains are analyzed for new genes that impart drug resistance or increased pathogenicity.

If a pandemic appears to be starting, information is shared with leadership in the U.S. and partner nations on armed forces protection methods. These methods include maintaining humanitarian assistance, peacekeeping and national defense missions.

Advanced Techniques for U.S. Navy and Marine Corps - Spatial Disorientation Countermeasures Training

Story courtesy of NAMRU-Dayton Public Affairs



Spatial Disorientation Dome at the NAMRU-D Spatial Disorientation Laboratory (Photo courtesy of NAMRU-Dayton Public Affairs)

DAYTON, Ohio - Aviation spatial disorientation (SD) is best described as a pilot's inability to correctly interpret aircraft attitude, altitude, or airspeed in relation to the earth or other points of reference.

If not recognized immediately, this sensory misperception can lead to controlled flight into the ground, midair collision, or inappropriate control inputs resulting in a serious mishap.

The ubiquity of this problem has been well documented by mishap reports and surveys that indicate virtually all pilots experience some form of SD during their careers, and SD is the leading cause of Class A mishaps in Naval Aviation.

Although many of the past explanations for SD have concentrated on isolated vestibular illusions as primary causal factors, the growing

consensus among SD researchers is that disorientation in the cockpit is most likely generated from conflicting visual and vestibular cues that confound cognitive processing of pilot spatial strategies.

This revised interpretation of causal factors has helped Naval Medical Research Unit - Dayton (NAMRU-D) researchers identify and classify common SD events, which have further led to the specification of vestibular, cognitive, and visual components of SD.

To help pilots recognize and avoid SD, NAMRU-D is currently generating SD training countermeasures that incorporate emerging concepts gathered from recent mishap analysis, physiological incident reports, and ongoing aeromedical research.

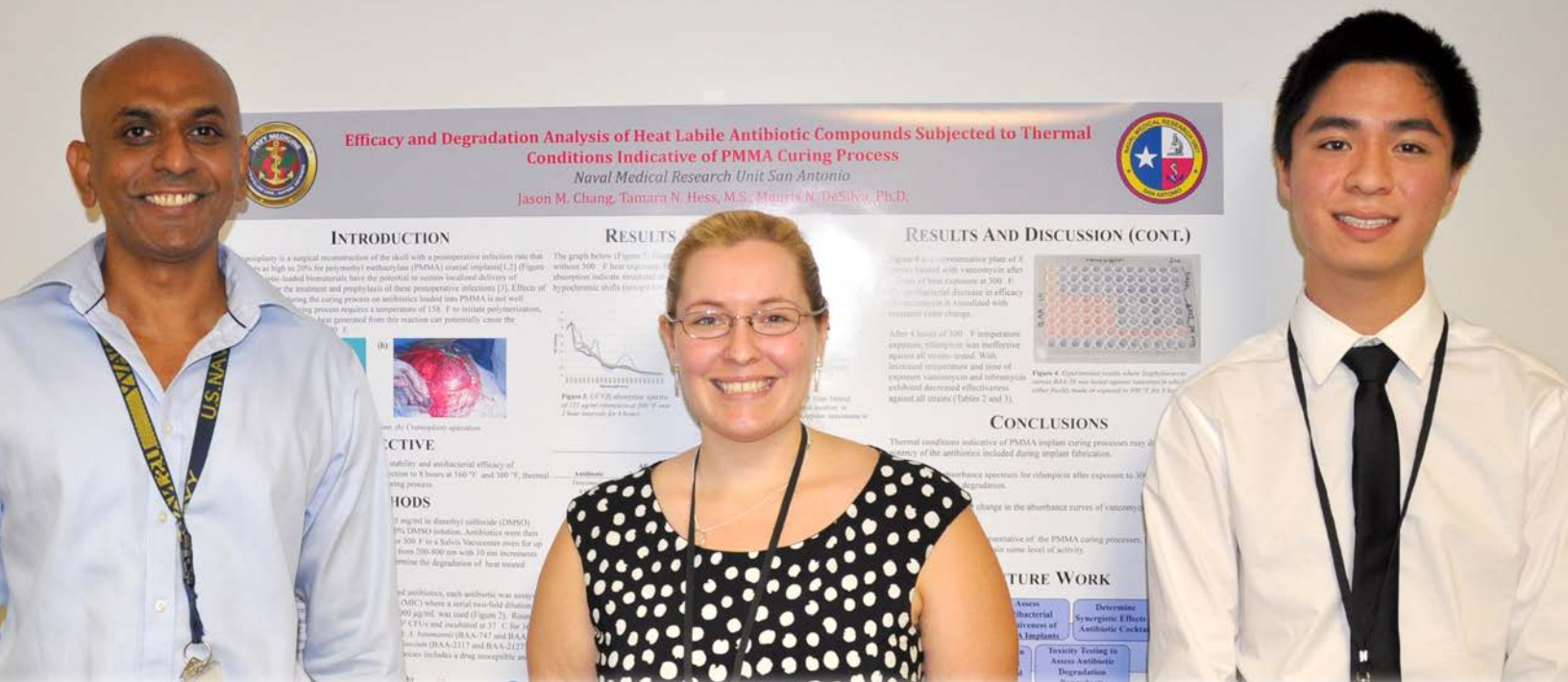
Using low cost simulators, flight

scenarios are being designed, tested, and validated as training tools to teach flight crew members how to recognize, cope with, and recover from the most prevalent forms of SD.

This work is unique in that it increases the emphasis on how pilots use, or sometimes misuse, spatial cues such as the natural horizon, the artificial horizon instrument, and aircraft structure reference points (e.g., the canopy bow or the top of the glare shield).

This work is also studying how pilots develop spatial strategies that incorporate these spatial cues and how researchers might be able to create training scenarios that promote better spatial strategy development and application.

This work is being funded by Naval Air Systems Command.



Meet NAMRU-SA's 2014 NREIP Summer Intern, Jason Chang

Story by Ms. Tamara Hess, NAMRU-San Antonio

(Left to right) Dr. Mauris DeSilva, Ms. Tamara Hess, Mr. Jason Chang (Photo courtesy of NAMRU-SA Public Affairs)

SAN ANTONIO -- The Naval Medical Research Unit - San Antonio (NAMRU-SA) sponsored an intern this summer through the Naval Research Enterprise Internship Program (NREIP).

The 10-week internships are designed to encourage students to pursue scientific careers and expose them to the research and technology efforts within the Department of Navy (DoN).

This year's selectee was Mr. Jason Chang, a senior pursuing a bachelor's degree in biomedical engineering at the University of Texas at Dallas (UT Dallas). His scientific interests were broadened by working with the Craniofacial Health and Restorative Medicine Directorate under Dr. Mauris DeSilva.

Chang took part in a project aimed at antibiotic incorporation into polymethyl methacrylate (PMMA), which is used for cranial implants.

Specifically, he was involved in assessing antibiotic activities before and after exposure to temperatures representative of the curing process of PMMA.

While at NAMRU-SA, Chang learned how to compose professional research communications such as an abstract and poster.

He plans to present the poster at the Biomedical Engineering Society conference this October. Chang also delivered a final seminar on his summer work.

Chang's internship on Joint Base San Antonio Fort Sam Houston (JBSA) provided a unique opportunity for him to not only work with the DoN, but also understand military medicine and how services integrate with one another in the research field.

Particularly, Chang worked with a dental laboratory in the Oral and

Maxillofacial Surgery Department at San Antonio Military Medical Center (SAMMC) and gained knowledge of the use of Micro CT through the USAF Dental Evaluation and Consultation Service.

Chang toured the Center for the Intrepid, a wounded warrior rehabilitation facility, as well as the U.S. Army Institute of Surgical Research Burn Center located within SAMMC hospital.

On those visits, he learned just how resilient our warriors are and how the projects at NAMRU-SA align with the mission of enhancing health and addressing emergent medical and oral/facial problems in routine and combat operations.

Chang will be returning to UT Dallas this fall, bringing with him the knowledge of new techniques, a fresh perspective, and some Navy pride.

Lab in Groton Hosts NREIP and SEAP Interns this Summer

Story courtesy of NSMRL Public Affairs



NREIP and SEAP interns (left to right) Nicolas Grandel, Alexander Rossi, Joseph Warmus and Jeffery Bolkhovskiy. NREIP interns are Alexander Rossi who attends the University of Rhode Island and Jeffery Bolkhovskiy who is a graduate student at Worcester Polytechnic Institute. The SEAP students are Nicolas Grandel who is a rising Senior at Culver Academies in Coleburn, Indiana, and Joseph Warmus, also a rising Senior, at Ledyard High School in Ledyard, Connecticut. (Photo courtesy of NSMRL Public Affairs)

GROTON, Conn. - The Naval Submarine Medical Research Laboratory (NSMRL) at Naval Submarine Base New London hosted four interns this past summer as part of the Naval Research Enterprise Internship Program (NREIP) and Science and Engineering Apprenticeship Program (SEAP), sponsored by the Office of Naval Research and administered by the American Society for Engineering Education.

The programs offer students a unique and positive experience in their fields of interest, encouraging them to pursue careers in science and engineering.

SEAP interns Nicolas Grandel and Joseph Warmus, rising seniors in high school, teamed up to design and construct a boat capable of carrying a 100 kg load having autonomous propulsion and steering capable of following a programmed path.

"Our initial design was faulty," said Grandel. "With Dr. Qin's guidance on how to approach a problem, be inquisitive and methodical in our approach, we successfully completed our project."

NREIP intern Alexander Rossi is an undergraduate student at the University of Rhode Island. He successfully designed a fully

functional graphical user interface (GUI) for an underwater sound propagation model.

"From the first day, you are put into a dynamic environment [and] expected to perform," said Rossi.

Jeffery Bolkhovskiy, also an NREIP intern, is a graduate student at Worcester Polytechnic Institute. He was tasked to design, program, and test a series of cognitive models meant to simulate human performance on visual and audio search tasks to aid future periscope GUI designs.

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NMRC Researchers Mentor SEAP and NREIP Interns

Story by Mikelle D. Smith, Naval Medical Research Center Public Affairs

SILVER SPRING, Md. – Researchers at Naval Medical Research Center (NMRC) volunteered as mentors for the Science and Engineering Apprenticeship Program (SEAP) and the Naval Research Enterprise Internship Program (NREIP) over the summer.

The SEAP and NREIP programs, which take place every summer from June to August, give high school and undergraduate college students the opportunity to gain lab experiences while under the supervision of professional scientists and researchers.

“This was my first experience being a mentor in the Navy,” said NMRC researcher Lt. Uade Da Silva, who mentored SEAP intern Bronte Nevins

and NREIP intern Dwight Harris. “I have been a mentor for post-graduate students at Vanderbilt University and during my undergraduate time at Morgan State University. When I heard there was a spot open to mentor these students I jumped at the opportunity.”

Mentors are given free-reign in developing a practical and interesting schedule for the summer interns to follow. In many cases, interns with extensive scientific knowledge are encouraged to explore different findings and produce their own results.

“I developed two projects for my SEAP and NREIP students to research,” said NMRC researcher Lt. Christina Farris. “We investigated an outbreak so they got

to learn about the science in an exciting way as well as the things that lead up to what we as researchers do. Actually getting to work in a real lab is very different from taking AP biolab courses, so I believe programs such as SEAP and NREIP give the students the opportunity to truly think about whether science is something they are interested in.”

Mentoring SEAP and NREIP students is an added task for NMRC researchers that volunteer. In many cases, researchers look to colleagues to assist them in providing students with a variety of perspectives to give them a better understanding of working in a team environment.

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NAMRU-3 Junior Researcher Receives “One Health” Certificate

Story courtesy of NAMRU-3 Public Affairs



Nermeen Fahmy collects mosquito larvae from a field trip. (Photo taken by Dr. Gregory Gray)

CAIRO – The U.S. Naval Medical Research Unit No. Three (NAMRU-3) encourages participation by junior researchers in the University of Florida Department of Environmental and Global Health’s graduate study certificate program, with funding from the Armed Forces Health Surveillance Center (AFHSC). This year’s updated program is called the “Certificate in One Health” and the goal is to encourage collaborations to engage public health, veterinary health, and environmental health professionals in problem solving.

Last May, NAMRU-3 Vector Biology Research Program’s Ms. Nermeen Fahmy attended lectures, tutorials, field experiences, laboratory exercises, and public health demonstrations. Attendees from Iraq, Lebanon, Pakistan, Nigeria, Bangladesh, Yemen, China and others joined Ms. Fahmy on the campus of the University of Florida, Gainesville.

“All of us enjoyed the cultural exchange and sharing our own expertise with others in the group,” said Fahmy. “Their academic levels were similar to mine, so we all worked together to find solutions to our assignments. Those with experience in epidemiology, veterinary medicine, or molecular biology helped the others understand the concepts in the lectures. While working in the PH lab, the class learned to do PCR; this was my opportunity to help others understand PCR.”

In the certificate program, the students complete four courses: three onsite, including Introduction to One Health Problem Solving, Public Health Laboratory Techniques, and Introduction to Entomology Zoonotic Diseases and Food Safety. The students also take web-based training on Environmental Health Concepts in Public Health.

“We learned how to prepare for an outbreak investigation, how to verify the diagnosis and confirm the existence of an outbreak as an example of “One Health” problem solving,” said Fahmy, “In order to have public health, environmental health and veterinary medicine work together for detection of emerging infectious disease. We also learned how to conduct surveillance in countries with disease outbreaks, studying what steps to go through so that the plan can be executed and succeed.”

NAMRU-3 Visits IEIP Sites In Damanhour

Story courtesy of NAMRU-3 Public Affairs



NAMRU-3 Commanding Officer Capt. Gilstad presents certificates of completion of training to Dr. Nancy Ibrahim from Alexandria Fever Hospital. From left to right: Dr. Mark Wooster, Capt. Gilstad, MOHP's Dr. Nehad Azzazy, Dr. Nancy Ibrahim, Dr. Hoda Mansour and Dr. Adel Mansour. (Photo courtesy of NAMRU-3 Public Affairs)

CAIRO - The U.S. Naval Medical Research Unit No. Three's (NAMRU-3) Commanding Officer, Capt. John Gilstad; Executive Officer, Capt. Patrick Blair; and the Centers of Disease Control and Prevention's (CDC) Global Disease Detection and Response Program Director, Dr. Mark Wooster, traveled to Damanhour, Egypt, to meet with collaborators and tour study and hospital sites, in August.

During the trip, they visited the Ministry of Health and Population's Public Health Laboratory, Fever Hospital Chest Hospital; and, Teaching Hospital, and the International Emerging Infections Program (IEIP) and Global Disease and Detection (GDD) laboratories.

Located 100 miles north of Cairo in the Nile Delta, Damanhour (dedicated to the Egyptian god Horus and one of the oldest cities in the world) is the capital of the governorate of Beheira.

The region is an important agricultural center with a diverse population. The group met with Dr. Mohamed Nematallah, First Undersecretary of Health at the

Central Health Administration, to express appreciation for the First Undersecretary's support and to discuss the role of the IEIP in regional public health.

"We are extremely pleased with our collaborative research in Damanhour," said Nematallah. "We encourage further collaboration and training in the surrounding areas as well."

"Visiting the sites encourages the IEIP teams," said Dr. Adel Mansour. "They saw firsthand the interest of their U.S. partners in the exciting work they are doing."

Major areas of ongoing research include population-based surveillance for acute respiratory disease, acute febrile illness, and acute infectious neurological disease studies.

IEIP works with the Ministry of Health and Population and CDC to address Egyptian infectious disease threats and emerging global health issues through disease surveillance, applied research, and public health training activities. The collaborative research is managed by

Dr. Adel Mansour, Damanhour IEIP site coordinator, and Dr. Hoda Mansour, IEIP lab technical adviser.

The NAMRU-3 team was pleased to see the sites firsthand and gained a better understanding of the collaborative relationship with MOHP and IEIP site staff. Gilstad met with the directors of the hospitals and laboratories, and the teams of social workers in the hospitals who collect data from the patients.

"This project is providing a wealth of high-quality data on public health and disease," said Gilstad. "These data can be used by the Ministry of Health to improve disease prevention and control in the city and region. It is also valuable for expanding the scientific basis of Egyptian and regional public health through research, to which NAMRU-3 hopes to contribute."

GDD has recently implemented a cooperative agreement with the Egyptian Ministry of Health and Population to better integrate IEIP activities into the Ministry's programs and facilities.

R&D Chronicles:

When Errol Flynn Wore Aviator Wings

Dive Bomber & Naval Aviation Medical Research of World War II

By Andre B. Sobocinski, Historian, Bureau of Medicine and Surgery

Part II

“Flying is like adrenaline to tense pilots; take it away, and they fold up ... so you keep them flying to coax them back on their feet, but when the fatigue becomes chronic they are usually through. A flight surgeon has to face the truth, and often, it isn’t very pleasant.”

~Lt. Rogers (Ralph Bellamy), Dive Bomber

Midway through the film *Dive Bomber*, Navy flight surgeons Lt. Lee (Errol Flynn) and Lt. Rogers (Ralph Bellamy) are forced to ground a veteran Navy pilot who is suffering anxiety and intense irritability due to chronic “pilot fatigue.”

Admittedly, it is a difficult situation and one that spurs Lee to question his decision of becoming a Navy doctor. “Well, I guess I should have followed my mother’s fondest wish,” Lee remarks to Rogers. “She wanted me to become a violinist.”

Although “grounding” pilots was not an uncommon practice for flight surgeons on the cusp of World War II, the war years would see greater concern placed on the mental and emotional health of pilots and prospective flyers.

The real life Lt. Lee’s would be joined in this colossal effort by a select group of reserve officers who are considered the first aviation experimental psychologists in the Navy.

In January 1942, Dr. John Gamewell Jenkins the Chairman of the National Research Council’s Committee on Selection and Training of aircraft pilots, was appointed head of the Bureau of Medicine and Surgery’s newly created Aviation Psychology Branch.

A former director of psychology at University of Maryland, Lt. Cmdr. Jenkins would help guide the Navy to new concepts on alleviating combat stress through regular pilot rotations, reducing exposure to active combat situations, and establishing “rest centers” for pilots.

Navy aviation psychologists built a robust program for administering and designing tests for selection, and training prospective pilots and aviation personnel.

By war’s end, psychologists serving at Navy preflight schools, flight schools, and research activities had developed 250 different tests for evaluating personalities, psychomotor skills, and



Established in 1944, the Navy’s Combat Criterion Program was a survey used to build a “suitability index” for pilots based on behavioral traits.

More than 2,000 Navy pilots were surveyed on such notions such as teamwork, dependability and the ability to size up complex situations. (Illustrations courtesy of BUMED News Letter Aviation Supplement)

training-performance of aviators.

The Navy’s World War II aviation psychologists also explored the behavioral traits of successful combat pilots and researched better methods for “inter-communication” in flight.

Programs like Combat Criterion and Speech Intelligibility Research would be among the important legacies of these wartime psychologists and help ensure that pilots were “aeronautically adapted” for flight and for flight instruction.



Navy Lab in Dayton Wins 2014 When Work Works Award

Story courtesy of NAMRU-Dayton Public Affairs



DAYTON, Ohio – Naval Medical Research Unit - Dayton (NAMRU-D) was recognized as a winner of the 2014 “When Work Works Award.” This prestigious award ranks the command in the top 20 percent of employers nationally in terms of programs, policies, and a culture which promotes an effective flexible workplace.

Upon notification of winning the award NAMRU-D Commanding Officer Capt. Jeffrey Andrews said, “the importance of morale and balancing your work and life priorities is one of the main tenets of our command philosophy. I believe everyone makes a difference and is empowered to focus on doing what is right, not just what is easy.”

The “When Work Works Award,” formally known as the Alfred P. Sloan Awards for

Excellence in Workplace Effectiveness and Flexibility, is presented annually by a joint partnership between the Families and Work Institute (FWI) and The Society for Human Resource Management (SHRM).

This year, winners are from 42 different states and the District of Columbia. NAMRU-D was one of 15 organizations to receive the award. The award’s rigorous selection process involves an evaluation of the employers’ programs and practices, and a confidential employee survey. Applications were measured against national data from FWI’s National Study of Employers. Candidate organizations had to score at or above the 80th percentile of employers nationally.

“I am continually impressed with the professionalism and character of those in my command,” said Andrews. “I’m grateful for their dedication, loyalty, and selfless attitude in understanding their individual, unique role in maximizing the performance and survivability of our joint warfighters.”

The award recognizes worksites that have distinguished themselves as a leading employer of choice. These worksites demonstrate success in using flexibility as part of an effective workplace strategy to achieve business goals and benefits employees.



The ever-evolving NAMRU-D workplace aims to minimize employee burn-out through proactive policies and flexible working hours while instilling an understanding of trust to fulfill job duties.

“We are an extended family and strong team,” said Andrews. “It is this teamwork and creative thinking that will forge the future growth and ultimate effectiveness of NAMRU-D. It is amazing what can be accomplished when individuals are empowered and have ownership and then work together as a team to reach a relevant solution.”

NAMRU-D will also be recognized by the When Work Works Community Partner at an awards event.

Lab in Groton Hosts NREIP and SEAP Interns this Summer

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NREIP/SEAP students work with their mentors, Navy scientists and engineers, to gain “hands-on” experience in a professional research setting where they are treated as research assistants.

They are given the opportunity to learn how STEM (Science, Technology, Engineering and Math) research can benefit the Navy as well as the civilian

community and gain insight into what kind of work awaits them in their future career.

It is no secret that mentors play a huge role in the success of NREIP/SEAP. Dr. Michael Qin, Principal Investigator in the Warfighter Performance Department, has been a mentor for several years and has dedicated his time and talent to the program.

Dr. Qin interacts with students on a daily basis, guides their work and encourages them to make discoveries while balancing his role as a researcher.

At the end of the summer students prepare and present final reports on their research experience.

NAMRU-6 Peru Hosts Students and Supports Academic Projects from Around the World

Story courtesy of NAMRU-6 Public Affairs



Three Tulane students and the influenza cohorts study field workers. (Photo courtesy of NAMRU-6 Public Affairs)

LIMA, Peru – The U.S. Naval Medical Research Unit No. Six (NAMRU-6) is a world leader in tropical infectious diseases research and supports numerous collaborating universities.

In addition to the dozens of medical residents, fellows, and students who passed through in the last six months on clinical rotations the following are some highlights of the command's partnerships:

University of Texas Medical Branch

Medical technology student Eulogia Arque Sollace characterized pathogenic *E. coli* from clinical samples of travelers in Cuzco with acute diarrhea using techniques in DNA extraction and PCR detection.

James Madison University Sophomore biology student Jennifer M. Prugil identified different types of *Salmonella* pathogenic strains stored in the bacteriology repository.

Three students from Stony Brook University School of Medicine.

Nicholas Taylor investigated the prevalence of microfilariasis in blood smear microscopy slides previously collected from rural communities in the Amazon.

Ryan Lamm worked on the diagnosis and speciation of leishmaniasis patients in the Southern Peruvian Amazon.

Clifford Sung helped with the final activities of a clinical trial assessing artesunate resistance in *Plasmodium falciparum*; his efforts were critical to improving regulatory processes and obtaining study initiation approval.

George Washington University Medical School Medical student Adam McFarland also participated in the artesunate study and he is publishing a case report of a soldier with severe vivax malaria.

Notre Dame University Global Health Master's student Andrew Taniguchi worked on the experimental infection of *Lutzomyia verrucarum* sandflies with *Leishmania Peruviana*.

University of Washington Medical students Liliana Sanchez Gonzalez accompanied field teams in Cusco performing active influenza-like illness surveillance and Valerie Cortez assisted with a Leptospirosis study.

Tulane University School of Public Health

Students Crystal Grippin, David Henry, and Katherine Conner assisted survey teams during household visits as part of the cohort study for respiratory illness in Cusco. Andrea Troupin assisted with mosquito collection and shadowed in the field with febrile surveillance teams in Iquitos.

(continued on page 14)

Pennsylvania State University Graduate Students Intern at NMRC

Story by Mikelle D. Smith, Naval Medical Research Center Public Affairs



Pennsylvania State University graduate student Nina Schumack (right) explains the results of research experiments she performed while interning at Naval Medical Research Center. Schumack is participating in the Master's in Biotechnology Internship Program part of her degree program's final step before graduation in December 2014. (Photo taken by Mikelle D. Smith, Naval Medical Research Center Public Affairs)

SILVER SPRING, Md -- Naval Medical Research Center's (NMRC) Enterics department shares a unique relationship with Pennsylvania State University. Every year from May to December graduate students from the university's Masters of Biotechnology Sciences program have the opportunity to apply for an internship with NMRC. This year two graduate students have been working diligently with researchers learning the ins and outs of practical lab experience.

The program known as the Master's in Biotechnology Internship is completed during the student's final semester of the degree. NMRC coordinators for the program, Alexander Maue and Frederic Poly, perform a vigorous application and interview process searching for highly qualified interns.

"The relationship that NMRC has with Penn State was set up by WRAIR [Walter Reed Army Institute of Research] researcher David Lanar," said Maue. "He did a significant amount of the correspondence with the university to make this relationship happen and offered us the opportunity to participate."

On average Maue and Poly interview 12 to 15 applicants a year and have been successful at placing them in labs at NMRC. The two graduate students, Nishith Nagabhushana and Nina Schumack, each have their own goals and ideas for their internship experience and future endeavors.

"I did my undergraduate in India and was interested in learning more about molecular biology and immunology," said Nagabhushana, who is from Bangalore, India. "When I interviewed here I found out that the work I was interested in was taking place at this facility. I am learning new techniques, software and gaining exceptional knowledge from my mentors Capt. Savarino and Miss Annette McVeigh ... they have truly made my time here worthwhile."

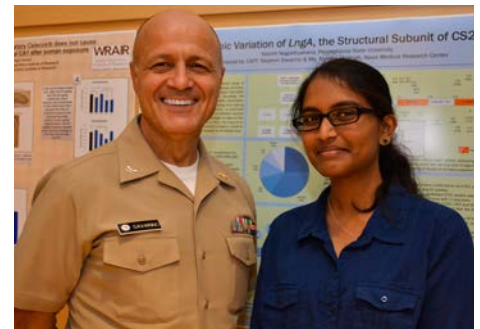
Interns have the ability to select programs they wish to interview for and even rate potential mentors based on comfort levels, and who will help them achieve their personal and professional goals.

"We want the interns to have the best experience possible and that is why we place them with mentors they feel happy

with," said Maue. "Nishith and Nina are very knowledgeable about multiple aspects of science and biotechnology. One thing that showed through is their enthusiasm and willingness to work and learn. They are both very bright and not afraid to roll up their sleeves."

In many cases interns have applied for, been offered and taken employment opportunities at NMRC following their internship.

"I love everyone I have worked with at NMRC," said Schumack, whose mentors are Maue, Patricia Guerry and Joanna Rimmer. "This experience has been amazing. I love the dynamic of the facility.



Nishith Nagabhushana (right) pictured with her mentor Capt. Stephen J. Savarino at Naval Medical Research Center's poster presentation event in the Albert R. Behnke auditorium. Nagabhushana is a graduate student finishing her final semester at Pennsylvania State University in December 2014. (Photo taken by Mikelle D. Smith, Naval Medical Research Center Public Affairs)

Everyone here engages in the projects, but still allows you to work independently. I am thankful to my mentors for being open to teaching me what they know and allowing me to flourish and thrive with my ideas."

In December the internship will end for Nagabhushana and Schumack, who will also receive their graduate degrees during Penn State's Fall 2014 commencement.

"We are always a bit saddened when interns finish their programs, but at the same time excited for them," said Maue. "We look forward to the next set of prospective interns."

NAMRU-6 Peru Hosts Students and Supports Academic Projects from Around the World

(continued from page 12)

McGill University Lara Schwarz assisted the febrile surveillance unit with animal capture and sampling in Puerto Maldonado.

Kansas University Lindsay Campbell assisted with a Leptospirosis study.

Several students from the **Universidad Nacional Mayor de San Marcos** in Lima, the oldest university in the Americas, worked at NAMRU-6.

Biology students Andree Valle Campos worked on the statistical analysis of protein microarray to profile the antibody responses to *Plasmodium falciparum* and *P. vivax* using bioinformatics tools and Catherina Ramos Tocto cultured and identified pathogens from clinical diarrheal and nosocomial infection samples.

Angelo Morales collaborated on the PREDICT project processing samples from animals in captivity such as non-human primates, rodents, reptiles, and others for diagnosis of *Trypanosoma* and finding an unexpectedly high prevalence.

Oscar Panana organized all the publications relevant to the department of parasitology and created electronic libraries. He also participated in the artesunate trial. Medical technology student Alessandra Medrano provided a better understanding of the molecular biology of malaria and PCR methods for future NAMRU-6 projects.

Medical students Liliana Alvarez assisted in the artesunate trial and Stefan Escobar assisted in writing a major NIH training grant and multiple regulatory processes leading to the approval of the artesunate trial.

Medical Technology student Maribel Tello worked on the diagnosis of Malaria of Riverine Mapping of Malaria's Project and standardized the Colorimetric Double-Site Plasmodium Lactate Dehydrogenase Antigen (LDH) Capture Enzyme Linked Immunosorbent assay to evaluate antimalarial drug resistance profiles of *Plasmodium vivax* and *Plasmodium falciparum*.

Several students from **Universidad Peruano Cayetano Heredia** worked at NAMRU-6.

Medical students Giancarlo Giovannini learned molecular biology techniques, leishmania diagnostics, and facilitated the collection and processing of the samples for the Artesunate clinical trial and Paola G. Gutierrez worked on molecular techniques for detection of sexually transmitted pathogens like *Neisseria gonorrhoea* and *Chlamydia trachomatis* using the Aptima Assay Gen Probe system and Leptospira using micro-agglutination assays.

Biology student Adriano Franco Casin standardized molecular techniques involved in enterotoxigenic *E. coli* characterization from clinical diarrhea

samples of deployed U.S. military members.

Universidad Nacional de la Amazonía Peruana Biology students Wagner Shapiama, Alexandra Johnston, and James Beuzeville assisted with the sample collection for the artesunate resistance clinical trial.

San Antonio Abad University Biology student Erika Perez performed molecular diagnosis of leishmania using kDNA, nested real time PCR, and microsatellite analysis of genetic diversity.

San Luis Gonzaga University biology student Aldo Rojas worked on molecular malaria diagnosis and speciation of inhabitants from the Morona River.

Universidad Catolica Santa Maria Biotechnology Engineering student José Luis Malaga Cordoba worked to detect pathogenic *E. coli* from clinical samples of travelers in Cuzco, Peru, with acute diarrhea using PCR.

Universidad Cientifica del Sur Samantha Zevallos assisted the febrile surveillance unit with animal capture and sampling in Puerto Maldonado.

NAMRU-6 is thankful to all our students for their contributions to the command mission and to biomedical science. We look forward to their presentations, publications, and future careers in the field.

NMRC Researchers Mentor SEAP and NREIP Interns

(continued from page 8)

"I would not have been able to mentor these students without my fellow researchers," said Da Silva. "My co-mentors, General Lee who works with WRAIR and Mike Shaughness who work with NMRC truly made it easier for me to be available to the students and continue my job as a researcher."

At the completion of the internship, a poster presentation was given in the Albert R. Behnke auditorium where mentors were able to recognize the students on successfully completing their summer programs.

"I hope that programs like this are around in the future for my daughter," said NMRC researcher, Lt. Kimberly Edgel, deputy head of NMRC's malaria

department and coordinator of the SEAP and NREIP programs. "The role of mentorship in career development is becoming more and more prominent. These interns are very bright and I believe the Navy views these individuals as the scientists of the future ... you can never put enough emphasis on the progression of the students' education and career experience."

SIX VISIT 6:

Story courtesy of NAMRU-6 Public Affairs

R&D MEETS THE AMPHIBIOUS NAVY IN PERU



NAMRU-6 onboard USS America (LHA-6) from left Mr Baylon, Lt. Cmdr. Jackson, Lt. Cmdr. Simons, Lt. Cmdr. Loayza (Peruvian liaison) Lt. Hontz, Capt. Petersen, SSG Hair, HM2 Jimenez, HM2 Siruchek, Lt. Gerbasi, Capt. Armstrong, Lt. Cmdr. Stoops. (Photo courtesy of NAMRU-6 Public Affairs)

LIMA, Peru - On a recent port call to Callao, Peru, USS America (LHA-6) Sailors from the ship's medical department and embarked Marine medical support elements had a subject matter exchange with the U.S. Naval Medical Research Unit No. Six (NAMRU-6).

First, the ship's company hosted a visit from NAMRU-6 Commanding Officer, Capt. Kyle Petersen; Executive Officer, Capt. Adam Armstrong, and 10 staff members.

NAMRU-6 investigators learned about combat casualty care, USS America medical capabilities, and the capabilities of the embarked MEU and aircraft squadrons.

Highlights included a visit through the operating suites, intensive care unit, as well as static displays of light armored

vehicles, aerial vertical replenishment and explosive ordinance disposal. This was followed by a visit to the flight deck for static displays and tours of the V-22 Osprey, CH-46 Sea Knight and SH-60 Seahawk aircraft.

Sailors and Marines accompanied the research team back to NAMRU-6 for a briefing of the R&D lab's international mission; a tour of the bacteriology, virology, parasitology, entomology labs; and a tour of the animal research facility.

The USS America crew was interested in hearing about pandemic surveillance efforts for diseases like avian influenza and Dengue fever; product development efforts for vaccines, and hand-held diagnostics for the warfighter or corpsman in the field; and the unique diplomatic and training mission of the only active duty command in South America.

NAMRU-6 then hosted a luncheon featuring Peruvian foods such as Causa, Aji de Gallina and Lomo Saltado.

The USS America team had a chance to get familiar with Lima traffic; experience cultural immersion in a foreign country; and see parasites, insects, and bacteria of importance to military operations as well as the latest in high-tech molecular biology equipment.

After a full day, all left better informed from the exchange and appreciative of the unique capabilities and career options in Navy Medicine.

Overall it was great for the NAMRU-6 team to experience a large deck amphibious ship and hear about their mission and capabilities.

Building Laboratory Quality Management Systems in Egypt

Story courtesy of NAMRU-3 Public Affairs



Dr. Dina Ramadan, CPHL trainer and facilitator, center, explains LQMS exercises. (Photo taken by Dr. Morales-Betoulle)

CAIRO, Egypt -- The U.S. Naval Medical Research Unit No. Three (NAMRU-3) began a project to improve and standardize laboratory quality management in public health laboratories in the region.

This project led by NAMRU-3's Global Disease and Detection Program (GDD) is the Laboratory Quality Management Systems (LQMS) implementation. They support building and strengthening national capacity for surveillance, detection, assessment, early notification and response to disease outbreaks in support of International Health Regulations (IHR) activities.

NAMRU-3's GDD is one of 10 Centers for Disease Control and Prevention (CDC) global disease and detection programs found throughout the world and the only one embedded in a DoD OCONUS Infectious Disease Research Laboratory. As the first step in the LQMS implementation, GDD staff trained four

Egyptian Central Public Health Laboratory (CPHL) scientists in the use of the World Health Organization's (WHO) Assessment Tool (LAT) and then visited six public health laboratories to conduct assessments.

In mid-2013, the GDD team developed a "training of trainers" course and in April 2014 the new Egyptian trainers presented the course to 20 other laboratorians from the CPHL in Cairo.

The goal was to give the participants a broad understanding of the scope of LQMS. The curriculum covered the components of good lab quality from the WHO/CDC/Clinical and Laboratory Standards Institute tool kit. The kit included biosafety and biosecurity, documents and records, organization, personnel, and process management.

GDD's Dr. Maria Morales-Betoulle and Dr. Hoda Mansour served as facilitators.

The end of course evaluation helped determine what should be kept or changed in the course. The ultimate goal of the course was to train the laboratorians to implement WHO LAT in their labs.

Implementation of the LQMS increases Egypt CPHL's capability and the capacity for disease surveillance and detection.

This international partnership with Egypt's CPHL advances NAMRU-3 mission to prevent, detect, and respond as part of the U.S. Interagency Global Health Security Agenda supporting public health.

The mission of NAMRU-3 is to study, monitor, and detect emerging and re-emerging disease threats of military and public health importance. Additionally, developing mitigation strategies against these threats in partnership with host nations and international and U.S. agencies in CENTCOM, EUCOM, and AFRICOM areas of responsibility.

NMRC & WRAIR JOINT MULTICULTURAL COMMITTEE RECOGNIZE WOMEN'S EQUALITY DAY

Photos taken by Mikelle D. Smith, Naval Medical Research Center Public Affairs



The Joint Multicultural Committee at Naval Medical Research Center (NMRC) and the Walter Reed Army Institute of Research (WRAIR) put together a ceremony in recognition of Women's Equality Day on August 26, 2014 in the Arthur R. Behnke Auditorium. During the festivities the committee, made up of NMRC and WRAIR enlisted and officers, held an election to demonstrate when women received the right to vote. Service members dressed in late 19th and early 20th century garments staged a march and protest equipped with famous historical quotes from individuals involved in the women's equality movement. NMRC Executive Officer, Capt. Elizabeth Montcalm-Smith, opened the ceremony reflecting on her experiences as a woman in the military. Additionally, WRAIR Commanding Officer, Col. Steven Braverman gave remarks expressing his gratitude for the committee for putting on the event.



NAMRU-SAN ANTONIO WOMEN FIGHT SEXUAL ASSAULT WITH SELF-DEFENSE SKILLS

Story courtesy of NAMRU-San Antonio Public Affairs



Several of NAMRU-SA's Dangerously Cute Seminar participants (left to right): Capt. Rita Simmons, NAMRU-SA commanding officer; Dr. Madelaine Paredes, Dr. Rena Martinez, Ms. Melanie Friesenhahn, Ms. Heather Grossman, Ms. Ashley Turnmire, and Ms. Leasha Schaub. (Photo courtesy of NAMRU-SA Public Affairs)

SAN ANTONIO -- Women staff and family members from the Naval Medical Research Unit-San Antonio (NAMRU-SA) learned Krav Maga strategies to protect and defend themselves in parking lot attacks and abduction situations, during a self-defense workshop benefiting the local Rape Crisis Center, August 2.

Krav Maga, which means “contact combat” in Hebrew, is a self-defense system developed for the military in Israel that focuses on neutralizing aggression and threat with a wide combination of effective and efficient counter-attack techniques.

The command's Sexual Assault Prevention and Response (SAPR) coordinator Melanie Friesenhahn, organized the command's participation for the women's only event, called the “Dangerously Cute

Seminar.” More than 150 women from the San Antonio area attended the personal protection training event and were taught a variety of Krav Maga defense techniques to ward off attackers or potential abductors.

The workshop instructor informed participants to first be aware surroundings and be prepared to react effectively.

Krav Maga strives for maximum versatility because you actually defend and attack simultaneously to quickly get yourself as safe as possible.

Before the workshop ended, each woman had the opportunity to put her skills to the test. One at a time participants were brought to the middle of the floor, and asked to close their eyes to simulate the disadvantaged position of not knowing

they would be “attacked.”

At the sound of the instructor's whistle, a male staff member dressed in padding attempted to either pick up and abduct the woman from behind, or attack and choke her from the front.

All who participated used their new skills efficiently and effectively, and walked away from the training confident and empowered.

This was the second event organized by Friesenhahn this year to help women stay strong, confident, and safe by raising awareness about sexual assault.

The first event, held in February, was a “Run 4 Hope 5k Run/Walk.” For both events, NAMRU-SA had the largest number of participants from a single command.

NEVER FORGET SEPTEMBER 11, 2001



U.S. Navy petty officers first class selected to be chief petty officers participate in a 9/11 memorial ceremony Sept. 11, 2014, at Naval Support Activity Naples, Italy. It was the 13th anniversary of the 9/11 terrorist attacks. (U.S. Navy photo by Mass Communication Specialist 1st Class David R. Krigbaum/Released)



A ceremonial U.S. flag is unfurled over the side of the Pentagon in Arlington, Va., Sept. 11, 2014, at sunrise in commemoration of 9/11. Terrorists hijacked four passenger aircraft Sept. 11, 2001. Two of the aircraft were deliberately crashed into the World Trade Center in New York; one was crashed into the Pentagon; the fourth crashed near Shanksville, Pa. Nearly 3,000 people died in the attacks. (DoD photo by Staff Sgt. Sean K. Harp, U.S. Army/Released)



President Barack Obama delivers remarks during a 9/11 commemoration ceremony at the National 9/11 Pentagon Memorial in Arlington, Va., Sept. 11, 2014. (U.S. Coast Guard photo by Petty Officer 2nd Class Patrick Kelley/Released)